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EVALUATING THE EXTENT TO WHICH CONCURRENTLY COLLECTED DIAGNOSIS CAN BE SUBSTITUTED FOR RETROSPECTIVE DIAGNOSIS AT DARNALL army COMMUNITY HOSPITAL, FORT HOOD, TEXAS

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This study examined the effectiveness of using concurrently collected diagnoses as a substitution for retrospective diagnoses for establishing diagnostic categorization of patients. The discrepancies between concurrent, concurrent additional, and retrospective diagnoses were evaluated from medical cases throughout the medical services provided. The author found an unacceptable discrepancy rate between the diagnoses compared. The principal problem was a lack of updating of diagnosis after admittance of the patient. The author concluded that under the current diagnostic system diagnoses are not sensitive enough to completely evaluate a patient's treatment sufficiently to base a performance budget system upon.

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by

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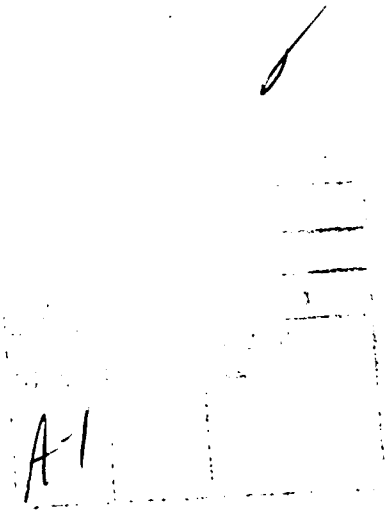

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I. INTRODUCTION

Overview of Darnall Army Community Hospital

The present Darnall Army Community Hospital (DACH), located at Fort Hood, Texas, was completed in July 1965. The 1965 hospital was intended to serve a total patient population of 50,000 which included 15,000 active duty soldiers. However, Vietnam era troop increases and Force Modernization increased the patient population to a total of 170,000 which includes an active duty population of approximately 40,000 that is distributed among III U.S. Army Corps, the 1st Cavalry Division, the 2nd Armored Division, the 6th Cavalry Brigade, the 13th Support Command, and other tenant units.

Because the current patient population is comparable to the population of Amarillo, Texas, which has five hospitals, DACH undertook a major renovation project to alleviate the inadequacies of the current facility. Upon completion of the expansion project, DACH will have added 242,985 square feet to its existing physical plant and upgraded over 221,000 square feet of existing space. The project will also increase the number of operating rooms from five to eight and the number of obstetrical delivery suites from two to four.

The long range goal of the hospital is maximum expansion of capabilities, and complete modernization of clinical and administrative capabilities. Clinical innovations include the establishment of an outpatient surgical center, Minor Emergency Clinic, Neonatal Intensive Care Unit, and

enhanced radiological capabilities. In order to ensure clinical efficiency, DACH has also implemented an Automated Patient Appointment System, Nursing Acuity System, and an automated cost and personnel accountability system. The enhanced clinical and administrative capabilities have placed DACH in the forefront of Army Community Medicine.

Stimuli for the Study

During the past decade, the health care industry has been singled out by government officials as one of the major contributors to this country's economic problems. With health care expenditures increasing from 6.8 percent of the gross national product (GNP) in 1969 to an estimated 10.5 percent of the GNP in 1982, the health care industry has the potential to impede the current economic recovery.[1] In response to the continued escalation of health care costs and, specifically, hospital costs, numerous experts have offered varied reasons for high health care costs: technology, third-party payment plans, lack of competition, and failure to use budget techniques of the industrial sector.[2] While all the above stated reasons for excessive health care costs are significant, it is the latter which is currently receiving the most attention.

In their textbook The Financial Management of Hospitals, Berman and Weeks discuss the output approach to constructing budgets in the commercial sector:

> First an estimate is made of how many "widgets" will be sold. The sales estimate is then translated, based on information provided through the firm's cost accounting system, into the number of pounds of raw materials, hours of labor, hours of machine time, etc., that will be needed. These projections of resource needs can then be combined with acquisition cost (price) estimates to calculate not only total expenses but also standard cost per unit.[3]

Even though the ability to calculate standard cost per unit would be a budgeting approach favored by third-party payers, Berman and Weeks have stated that the problem with this approach is quantitatively defining hospital output:

> While hospital output can be defined generically as an episode of care, one episode of care may not be at all similar to another. In fact, episodes of care more often than not vary from one another in terms of diagnosis and/or severity. This difference in the character of a hospital's product is what is known as difference in case mix.

Thus, if an output approach to health care budgeting is to be utilized, "some technique for accommodating case mix must be employed."[4]

The desire of third-party payers to revise the hospital budgeting process and, in turn, reform the reimbursement system has provided impetus for development and refinement of hospital case mix measurements. This desire to reform the hospital budgeting process is also present in the military health care sector. With the President's Private Sector Survey on Cost Containment studying methods to contain military health care costs a budget system is needed which promotes efficiency, can compare costs with the civilian sector, and has the potential to defend the military health care sector from attacks of governmental and non-governmental agencies.[5]

Because of the reasons stated above, the Army Surgeon General and the Commander, U.S. Army Health Services Command (HSC) are considering developing an expanded case mix approach to productivity in the Army health care system. Like the civilian community, the Army is evaluating the use of diagnosis related groups (DRGs) as a budget system. While DRGs have the potential to provide cost effectiveness and efficiency within the military health care system and have the capability to replace the Medical Care

Composite Unit (MCCU), the military resource planners need to evaluate the disadvantages of DRGs. Primary disadvantages are:

> 1. Diagnosis related groups reflect the state of medical technology and practice at the time of their development.
>
> 2. The performance of a surgical procedure often categorizes a patient into a more complex DRG.
>
> 3. To create, evaluate, or redefine the DRGs, an extremely large data base is required.
>
> 4. Diagnosis related groups sort patients into categories asserted to be homogeneous on the basis of the historical consumption of patient days.
>
> 5. Diagnosis related groups rely on data on discharge abstracts which often include classification and coding errors, fail to include all diagnoses and procedures, and vary by the documentation of the attending physician and the convention of the individual coder.[6]

While all the primary disadvantages of DRGs need serious evaluation, it is the latter disadvantage which has been identified as a major problem with the successful implementation of a DRG system.[7] Therefore, prior to developing a military unique DRG budget system, it would be beneficial to determine discharge data error rates within the Military Health Care System.

Literature Review

Case Mix Measurement

Broadly speaking, case mix measures can be classified into two major groups: (1) indirect measures and (2) direct patient-related measures. While indirect, or proxy, variables (bed size, assets per bed, number of facilities and services, etc.) are readily available, "they explain a relatively small proportion (less than one-half) of variation in such direct case mix measures as diagnostic distributions, surgical complications, and extent of surgery performed."[8] On the other hand, direct case mix measures are more costly but are more precise in measuring variations

in routine hospital costs: "patient-specific measures of case mix, such as diagnosis, could account for a substantial proportion of the variation in per-diem costs and per-case costs and charges among hospitals."[9]

Because direct or patient case mix measures are more precise in determining variations in hospital costs, economists and researchers shifted their emphasis on indirect measures to direct ones. The impetus for this shift in emphasis came from a study conducted by M.S. Feldstein during the 1960's. The study used the proportion of a hospital's patients in eight clinical services to describe case mix differences which accounted for 25 percent of the variation in per case cost across hospitals.[10] Since Feldstein's work additional studies have found that patient-specific measures of case mix could account for a substantial proportion of the variation in per-diem costs, per-case costs, and charges among hospitals.[11,12,13] Based on the work of Feldstein and other health economists and researchers, nine different measures of hospital output have been developed:

1. ICD-9-CM List A
2. Diagnosis Related Groups
3. Disease Staging
4. Patient Management Categories
5. VA Multi-Level Care Groups
6. AS-Score
7. Severity of Illness
8. MD-DADO
9. Generic Algorithms[14]

Even though these nine classification schemes do not represent all available diagnostic classification schemes, they do represent the systems that are most comprehensive and applicable to military hospitals. Also, each of these patient measures can be described by its purpose or objectives, variable explained and source of data elements (Table 1 and 2).

TABLE 1

PURPOSE FOR CLASSIFICATION

Utilization Review	Reimbursement	Quality Assurance	Management
Diagnosis Related Groups	MD-DADO	AS-SCORE	Generic Algorithms
ICD-9-CM List A	Patient Management Categories	Disease Staging	VA Multi-Level Care
		Severity of Illness Index	

TABLE 2

INFORMATION PROVIDED

Source of Data	Variables Explained		
	Length of Stay	Charge and/or Cost	Severity
Patient Chart		Patient Management Categories*	AS-SCORE Disease Staging* Severity of Illness Index VA Multi-Level Care Groups
Discharge Abstract	ICD-9-CM List A Diagnosis Related Groups	MD-DADO Generic Algorithms	

*Currently computerized to classify patients based on discharge abstract data.

While these two tables provide a good overview of the nine measures of hospital performance, a brief description of each system is called for.

ICD-9-CM List A (CPHA List A) One of the earliest attempts at case mix, the List A was developed to evaluate and review utilization of services and quality of care by the hospital, Professional standards Review Organization (PSRO), and other agencies. Containing 398 diagnoses, List A adds five age variables and dichotomies for operated/not operated and/or single diagnosis/multiple diagnosis which results in 7,960 case types. Although a useful system, the difficulty of using 7,960 case types has been cited as List A's most significant weakness.[15,16]

Two other disadvantages are that "a List-A case mix measure is not independent of the inputs actually used in treatment of the patients and ... it is not independent of the skill of the hospital in diagnosing comorbidity or the level of effort devoted to recording comorbidity."[17] The list A has two primary strengths. First, because the classification was based on a priori judgment of physicians, the groupings are a more valid measure of resource utilization. Second, List A includes an assessment of a particular patient's illness, instead of only being limited to a hypothetical disease condition.[18]

Diagnosis-Related Groups (DRGs): DRGs were developed in the early 1970s by Yale University's Center for the Study of Health Sciences. Based upon the concept that certain categories or groups of medical diagnoses consume similar types and quantities of hospital resources, discharge data from the Yale-New Haven, Connecticut, hospital were collapsed into eighty-three major categories which were then subdivided into 383 groups (DRGs) by the use of a modified "analysis of variance" statistical technique.[19] However, the first generation DRG system had several limitations:

1. Low clinical coherence

2. Limited acceptance of the system by physicians

3. Limited applicability of the system nationwide[20]

Because of these limitations, the Health Care Financing Administration (HCFA) funded research which developed revised DRG definitions.[21] Using the International Classification of Diseases-Ninth Revision-Clinical Modification (ICD-9-CM), the revised system's definitions are:

1. Exhaustive and Exclusive: All patients were to be assigned to one and only one DRG.

2. Manageable: No more than 500 DRGs.

3. Clinically coherent: Differences in length of stay were statistically significant.

4. Based on the Uniform Hospital Discharge Data Set[22]

The revised system expanded the number of DRGs to 470, which take into account four variables: (1) the primary diagnosis of the patient, (2) the secondary diagnosis of the patient, (3) surgical procedure, and (4) the patient's age.[23]

Having conducted sufficient research and testing of the new definitions, and directed by the Congress, HCFA proposed the use of the 470 DRGs for Medicare reimbursement. This system became law on April 20, 1983, when President Reagan signed the Social Security Amendments of 1983 (Public Law 98-21).[24]

Some of the strengths of a DRG system are:

1. Diagnosis related groups are conceptually appealing because they:

. attempt to describe patterns of resource consumption in terms of the similarities among and differences between patients,

. are based on patient diagnosis,

. consider secondary diagnosis and surgical and medical procedures provided to the patient.

2. Diagnosis related groups are based on data generally included in the discharge abstract for inpatients.

3. Diagnosis related groups result in a manageable number of diagnostic categories.

4. Diagnosis related groups are organized in a hierarchial manner so that the terminal diagnostic groups can be collapsed into fewer categories which, while more heterogeneous, are still useful.

5. Diagnosis related groups can be easily created using any of the major diagnostic coding conventions.[25]

Even though the focus of the prospective pricing legislation is on payment or pricing, the strengths of a DRG system allow it to be effectively utilized in the planning process and utilization review.

The use of DRGs in the planning process has been recommended at both the institutional and regional levels. By establishing a DRG data base, an institution can develop case mix profiles which can help an institution project and plan future resource and service requirements. Such an approach to planning has been demonstrated by Kropf and Greenberg when they determined the number of cardiac care units (CCU) required per 100,000 population within the state of New Jersey.[26]

Within the regional level, local health planning agencies can use DRGs to develop regional diagnostic profiles which can identify type of care by facility, referral patterns, and effectiveness of care. Also, the potential exists for planning agencies to establish the role of each hospital within its region (shaping its case mix) and develop a case mix index for individual hospitals with the use of DRGs, which would, in general, allow for a more detailed and standardized comparison than is now available.[27]

In addition to the use of DRGs within the budgeting and planning process, DRGs can be used for utilization review programs at both the institutional and the regional level. The utilization and quality control

Peer Review Organization (PRO) can develop regional length-of-stay standards for each DRG. Thus, an institution's actual length of stay experience can then be compared with the regional standards for each DRG. This comparison will highlight aberrant hospitals and possibly cause a facility to eliminate those procedures which significantly exceed the regional norms.[28]

Weaknesses in addition to those previously mentioned are:

1. Some clinical homogeneity within groups was lost in an attempt to derive a manageable number of patient classes.

2. DRGs may be limited from a clinical perspective due to:

   . differences in therapeutic philosophy,

   . the absence of common treatment regimens,

   . lack of staging and readmission data.

3. Small hospitals may not be able to use DRGs since they may not have enough patients in some categories to make DRG data meaningful.[29]

Disease Staging.

Developed in order to effectively evaluate patient care, disease staging defines patient case mix by linking major disease categories with their level of severity. Based on a concept developed at the National Institute of Health, disease staging divides a disease into four levels of severity:

1. Stage I - A condition with no complication or problems of minimal severity.

2. Stage II - A condition with local complications or problems of moderate severity.

3. Stage III - A condition with systemic complications or problems of a serious nature.

4. Stage IV - Death[30]

Using these four stages, a study was conducted using 1972 and 1973 data of a short-term general hospital. The study results showed that the stage of the disease was associated with length of stay, ancillary utilization and total patient charges.[31]

The major strengths of a disease staging case mix measure are:

1. Criteria are easily understood and accepted by physicians because of clinical meaningfulness.

2. Staging adds an explicit severity dimension to the classification scheme.

3. Disease stages are systematically related to variations in resource consumption.

On the other hand, the limitations of disease staging are:

1. Disease staging does not capture all the variables that contribute to hospital costs or resource requirements.

2. Severity may not always be related to resource consumption.[32,33]

Patient Management Category.

Currently in the development stage, the patient management approach to case mix measurement is based on an admissions-focused approach which assumes that "physicians diagnose and treat patients based on their known symptoms, not on diagnosis that may be confirmed several days after admission."[34] In developing the patient management categories, the researchers used a three-step process:

1. Patients are categorized based on symptoms at the time of admission.

2. Diagnostic and treatment services provided to each admission state are identified.

3. Costliness weights are developed by identifying the costs of the diagnostic and treatment algorithms.

Because the Patient Management Category system is still under development, it is too early to specify its strengths and weaknesses. However, additional analysis could lead to an effective case mix system.[35,36,37]

VA Multi-Level Care System (MLC)

Developed as a budget tool, the MLC system was designed to match patients' health resource needs with different amounts or clusters of resources, to identify the average resources consumed by patients at each level of care, and to determine the real costs of these resources. There are three basic components: a classification component for identifying patients' real resource needs, a data management component, and a financial management component. The MLC classification component assigns patients to a level of care matching the patients' resource needs, which is tied to resource consumption profiles by the data management component. Capturing both classifications of patient data, the data management component provides reports on a medical center's case mix. The third component, financial management, develops average costs per day for each level of care which has allowed the VA to test whether or not costs vary significantly between levels of care. While the MLC system enabled the VA to better manage its health care systems, significant weaknesses have caused the VA to replace MLC with a DRG system.[38]

AS-Score

Based on the concept that the patient's severity of illness will result in a longer, more complex, and more costly episode of care, AS-Score was developed as a tool to evaluate the appropriateness of hospital length

of stay and to measure physician performance. After a review of the medical record, the patient is placed into one of four levels of severity based on the following five attributes:

1. Age of the patient.
2. Organ systems involved.
3. Stage of disease.
4. Complications.
5. Response to appropriate therapy.

While still in the experimental stages, AS-Score has been shown to be a valid case mix system. Its primary weakness had been applicability to only medical diseases, but a recent study has shown AS-Score to be applicable to other disease categories.[39]

Severity of Illness Index (SII)

Developed by Susan Horn, the Severity of Illness Index is a refinement of the AS-Score system. While retaining the four severity classes, SII classifies patients based on seven attributes (Table 3) and can be scored by medical records personnel, which was a limitation of AS-Score. Studies have shown SII to be a reliable system with several applications:

1. Analyzing differences in charges among hospitals.
2. Analyzing differences in the severity distribution of patients among departments or hospitals.
3. Comparing mortality rates among hospitals.
4. Monitoring patient severity over time.
5. Analyzing differences in physician practice patterns.
6. Predicting hospital charges.[40,41]

While there are significant advantages to using a SII system, there are three major weaknesses which could preclude its use in most hospitals:

1. A rater must always refer to the medical record to collect the data.

2. Overall severity rating is dependent on the judgment of the rater.

3. The index is relatively labor intensive, which reduces its usefulness as a case mix measure.[42,43]

TABLE 3

PATIENT SEVERITY INDEX

CHARACTERISTIC					
		1	2	3	4
Stage of Principle Diagnosis		Asymptomatic	Moderate manifestations	Major manifestations	Catastrophic
Complications		None or very minor	Moderate (less important than principal diagnosis)	Major (as or important than principal diagnosis)	Catastrophic (death, institution, or major permanent disability)
Interactions		None	Low	Moderate	Major
Dependency		Low	Moderate	Major	Extreme
Procedures (Non O.R.)		Noninvasive Diagnostic	Therapeutic or Invasive	Nonemergency Life Support	Emergency Life Support
Response to Therapy	Rate	Prompt	Moderate Delay	Serious Delay	No Response
	Residual	None	Minor Residual Effect on Health	Moderate Residual Effect on Health	Major Residual
Severity Rating		1	2	3	4

SOURCE: Horn, S.D.; Chan, C.; Chanchich, B.; Clopton, C. Measuring Severity of Illness: A Reliability Study. Technical Report. Center for Hospital Management, The Johns Hopkins University, November 1981.

MD-DADO

The Physicians Discharge Abstract Data Optimal (MD-DADO) system is another system which was developed by Johns Hopkins University researchers. Developed to refine the original 383 Diagnosis Related Groups (DRGs), MD-DADO is using physician judgment to reformulate the Yale DRGs. Additionally, terminal groups were also developed using statistical analysis with charges as the dependent variable. The two methodologies are combined, based on the frequency of cases occurring within a cell, to create a physician discharge abstract data optimal group. The MD-DADO groups have been tested against DRGs and have been shown to achieve a greater reduction in both charge and length of stay variation. While MD-DADO could be a more costly system to develop, the methodology does allow for adjustment of the groups to reflect local factors and thus may give a more realistic view of an institution's products.[44,45]

Generic Algorithms

Generic Algorithms are a new approach to patient classification which are based on the following rubics:

1. Effectiveness in distinguishing groups in accordance with the purpose of the classification scheme.

2. Medically meaningful groups.

3. Maximum use of available discharge abstract information.

4. A practical and easily implemented system.

Focusing on identifying those variables that contributed to differences in resource consumption, (measured by charges) for patients with similar prinicpal diagnosis, two generic algorithms were developed: classification based on diagnostic information and classification based on

procedures performed. The diagnostic generic algorithms assess the mortality rate of the assigned secondary diagnosis, the length of stay, and the chronicity of the disease. While procedure algorithms assess whether a non-operating room or operating room procedure is performed (procedure 2), whether the procedure is generally performed in an operating room, and whether a major body cavity is entered (procedure 4). In an initial test of generic algorithms, a liver disease classification system was developed using the procedure 4 and mortality rate algorithms. While it is too early to evaluate generic algorithms, its primary strength seems to be the ability to determine reasons for differences in similar groups of patients.[46]

Data Quality

Independent support for the need to evaluate the reliability of input data to case mix measures comes from many sources.[47] However, the initial impetus came from studies conducted by the Institute of Medicine (IOM), which assessed the reliability of information abstracted from patients' medical records.[48] While the studies were conducted separately their major objective was the same - to determine the reliability of selected information items. Items assessed were: date of hospital admission, date of discharge, sex, date of birth or age, source of payment, principal diagnosis, admitting diagnosis, other diagnosis, principal and other procedures, race, marital status, and disposition.[49,50] Although previous studies have been conducted on quality of medical records, the IOM studies are unique for the following reasons:

1. They were national in scope.

2. They involved an independent examination of the medical record by some one other than the individual initially completing the abstract.

3. Conclusions were derived from a thorough review of the medical record.[51]

The first study "concentrated on data derived from hospital discharge abstracts processed by private abstract services" which covered about 65 percent of all discharges from short-stay general hospitals. Based on the sampling plan and a weighted analysis, data were generalized nationally to all 1974 discharges for Medicare and Medicaid patients who were treated in hospitals subscribing to the participating abstract services or the larger hospitals with internal data systems. The second study evaluated the data from Medicare claims submitted by hospitals to fiscal intermediaries and eventually to Health Care Financing Administration (HCFA). The Medicare study results were applied to "all Medicare beneficiaries age 65 and over, who were discharged from hospitals during 1974."[52]. The final IOM study focused on data collected by the National Hospital Discharge Survey (NHDS), a voluntary survey that yields statistics on utilization of all general and special non-federal, short-say hospitals in the United States.[53] Because the methods of the NHDS study were similar to the previous two IOM studies, the results could be applicable to all NHDS data collected in 1977.

In all three studies the non-medical data reliability was of a high level. However, reliability of diagnostic information was questioned by all three studies (Tables 4 and 5) and elicited "serious reservations about the adequacy of existing hospital discharge information."[54,55] Because these three studies were conducted during the time period when four-digit coding of diagnoses was standard, the evaluators believed there would be more concern about the reliability of hospital discharge data when a five-digit coding scheme was utilized.[56]

TABLE 4

DISCREPANCIES BETWEEN THE IOM FIELD TEAM AND ORIGINAL DATA SOURCE (PRIVATE ABSTRACT OR MEDICARE RECORD) FOR SELECTED DATA ITEMS

Data Item	Weighted Percent with No Discrepancy	
	Medicare Record	Private Abstract
Admission Date	99.5%	99.7%
Discharge Date	99.3	99.2
Date of Birth/Age	-	-
Sex	99.4	99.1
Payment Source	-	98.1
Principal Diagnoses (4)	57.2	65.2
Additional Diagnoses	74.5	-
Principal Procedures	78.9	73.2

Source: L.K. Demlo, P.M. Campbell, and S.S. Brown, "Reliability of Information Abstracted from Patients' Medical Records" Medical Care 16 (December 1978) p. 999, Table 1.

TABLE 5

ADEQUACY OF THE FACE SHEET FOR ABSTRACTING NHDS DATA (WEIGHTED PERCENT)

Data Item	Adequate	Insufficient	Inaccurate	Total
Admission Date	98.8	0.8	0.4	100.0
Discharge Date	99.2	0.6	0.2	100.0
Date of Birth or Age	96.9	0.8	2.3	100.0
Sex	97.4	1.0	1.6	100.0
Race	91.7	1.0	7.3	100.0
Marital Status	95.8	0.2	4.0	100.0
Principal Expected Source Payment	97.7	0.4	1.9	100.0
Additional Expected Source Payment	95.9	0.1	4.0	100.0
Patient Disposition	24.8	2.0	63.2	100.0
Principal Diagnosis	47.3	49.3	3.4	100.0
Principal Procedure	5.9	90.6	3.5	100.0

Source: L.K. Demlo and P.M. Campbell, "Improving Hospital Discharge Data: Lessons From the National Hospital Discharge Survey" Medical Care Vol 19 (October 1981) p. 1037, Table 8.

Since the IOM studies of the reliability of discharge data found high error rates, additional studies were conducted by Richard F. Corn, Cynthia Barnard and Truman Esmond, and H.P. Doremus and Elana M. Michenzi. Corn's research was sponsored by the National Center for Health Statistics and was an assessment of the state of quality control procedures utilized by Abstracting Services. Using a combination of letters, telephone calls and personal interviews, information was gathered on quality control procedures reportedly followed by private abstracting services, HDS, and HCFA in its 20 percent Medicare sample. In studying procedures utilized in preparation and processing of either an abstract or claim form, Corn's study team raised four significant points:

1. Each of the three major national sources of hospital discharge data need improvement, particularly in the verification of abstracted information, error correction, and training programs.

2. Validity of the (HDS) data may be limited because the abstractor is instructed to refer only to the face sheet of the medical record.

3. Quality control procedures of the Medicare system are limited and vary across the country.

4. Steps should be taken to improve the quality of discharge data in view of the importance of accurate data.[57]

The study conducted by Barnard and Esmond had three areas of focus: the ambiguity inherent in use of diagnosis and procedure coding schemes and their applicability; the source of Medicare bill data and its relevance to DRG assignment; financial and case mix implications of discrepancies between billing data and medical records data. Using a random 50 percent sample of Medicare inpatients discharged from Rush Presbyterian/St. Luke's Medical Center during the year beginning 1 May 1979 Barnard and Esmond compared concurrently determined discharge data with retrospectively determined discharge data.[58] In comparing the two types

of discharge data, the study showed that "in 53 percent of the cases...the retrospectively coded diagnosis had not been cross-coded at all on a concurrent basis."[59] (Table 6) When applying this coding difference to the DRG payment process, the study showed that "reimbursement based on concurrent data, with case mix and local wage index as the sole determinant of payment amount, would have averaged $600 less than reimbursement based on retrospective data."[60] (Table 7) In analyzing their research data, Barnard and Esmond were quite emphatic in the use of concurrent data as a case mix data base. Specifically, they observe "the data upon which the Health Care Financing Administration plans to construct its new reimbursement mechanism may be inappropriate for that use...the current case mix based on Diagnosis-Related Groups cannot be used to measure resource use and therefore will not accurately predict reimbursement needs."[61] Additional support for Barnard and Esmond's hypothesis concerning the reliability of the HCFA data base has been provided by Doremus and Michenzi who compared data from the MEDPAR File, the original medical record discharge order, and a reabstracted record. Based on the authors' comparison, an analysis is made of each item's effect upon DRG classification and the Medicare reimbursement ceiling for University Hospitals of Cleveland. Study results show:

1. In 47.7 percent of the cases studied the principal diagnosis code was different in the HCFA data base than in the patient's original medical record discharge order.

2. A comparison of the principal diagnosis code on the original discharge order with the code on the reabstracted record revealed a different code in 32.1 percent of the cases studied.

3. The variation in diagnostic and surgical information between the HCFA data base and information found in the original discharge order resulted in a different DRG classification for 61.1 percent of the patients in the study. (Table 8)

TABLE 6

MATCHING RETROSPECTIVE PRINCIPAL AND SECONDARY CODES TO CONCURRENT CODES

	Principal Diagnosis	Secondary Diagnosis	Principal Procedure	Secondary Procedure
Retrospective code matches concurrent (%)	35.05	4.77	31.32	5.34
Retrospective principal as concurrent secondary or vice versa (%)	6.38	6.45	4.43	6.96
Retrospective code as concurrent tertiary (%)	2.82	2.41	.54	.40
No retrospective code found (%)	2.62	41.60	15.83	40.19
Retrospective code not in concurrent (%)	53.12	44.76	47.88	47.11
Total	100.0	100.0	100.0	100.0

NOTE: Rounded numbers may not add to 100%

Source: C. Barnard and T. Esmond. "DRG-Based Reimbursement: The Use of Concurrent and Retrospective Clinical Data" Medical Care 19: (November 1981), p. 1077, Table 2.

TABLE 7

DISCREPANCIES IN RETROSPECTIVE VERSUS CONCURRENT DRGs

	No. of Cases	%
Retrospective DRG same as concurrent	684	22.984
Retrospective DRG differs from concurrent	2292	77.016

Source: C. Barnard and T. Esmond, "DRG-Based Reimbursement: The Use of Concurrent and Retrospective Clinical Data" Medical Care 19 (November 1981): p. 1078, Table 3.

TABLE 8

DIAGNOSTIC DATA DISCREPANCIES BETWEEN THE HEALTH CARE FINANCE ADMINISTRATION (HCFA) RECORD, ORIGINAL DISCHARGE ORDER, AND REABSTRACTED RECORD

Data Item	HCFA Record Compared With Original Discharge Order		Original Discharge Order Compared With Reabstracted Record	
	Number	%	Number	%
Disagreement on principal diagnostic code (all digits --ICDA-8)	125	47.7	84	32.1
Cases with indication of one additional diagnosis on at least one record	159	61.0	201	76.7
Disagreement on first listed additional diagnosis when both records show an additional diagnosis/diagnoses	0	0	77	38.3
Cases with indication of additional diagnosis on onle one record	159	100.0	54	26.9
Cases with no indication of additional diagnosis on either record	103	39.3	61	23.3

Source: H.D. Doremus and E.M. Michenzi, "Data Quality: An Illustration of its Potential Impact Upon a Diagnosis - Related Group's Case Mix Index and Reimbursement" Medical Care (October 1983): p. 100, Table 1.

4. In 37 percent of the cases studied the DRG classification disagreed when classification was compared based on diagnostic and surgical information from the original discharge order and the reabstracted record.

5. Using data from the HCFA data base for case mix reimbursement would lead to a significantly understated level of Medicare reimbursement.

The results of the study demonstrated that there is inaccurate, incomplete recording of diagnostic and surgical information in the medical record, which reinforced the findings of Barnard and Esmond's study, and brought out the requirement for additional research on data quality.[62]

Overview and Criteria

The foregoing studies tend to suggest that data on discharge abstracts may be inappropriate for use in developing a case mix system. Additionally, Hornbrook has suggested that our current hospital diagnostic data collection system precludes the capture of complete diagnostic data:

> Most diagnostic classification schemes were designed to be applied to secondary data sources; the clinician enters observations and diagnostic hypothesis in the patient's medical record. The diagnostic coding is done in the medical records room by technicians who usually have no other communication with the attending physician. Considerable ambiguity is introduced into the diagnostic coding when insufficient information is recorded by the physician to make a final coding decision.[63]

Thus, prior to implementing any case mix system, there is a need for further research on data quality.

To answer this need for further research, the researcher will review appropriate literature and conduct research by analyzing a block sample of medical records at Darnall Army Community Hospital (DACH). In order to limit the scope of this research, the following research statement is submitted: To determine if concurrently determined diagnosis can be substituted for retrospectively determined diagnosis.

Research Methodology

Objectives

As research objectives, the following steps were taken to complete this study:

1. Obtain medical records for a one-month period during Fiscal Year 1984.

2. Eliminate those categories of patients who were admitted for delivery, newborns, absent sick, carded for record, and medical board proceedings.

3. Determine both the concurrent and retrospective principal diagnosis for remaining sample.

4. Determine the discrepancy rate between concurrent and retrospective diagnosis.

5. Conduct an audit, utilizing two senior coders, of a 50 percent random sample of those records in which the concurrent data differed from the retrospective data and determine the principal reason for the discrepancy.

6. Evaluate all data and the determination of whether or not concurrently determined diagnosis can be substituted for retrospectively determined diagnosis.

7. Based on the results of step 6, review and evaluation of all data and the determination of specific actions which will reduce the discrepancy rate.

Criteria

An error rate between concurrent and retrospective diagnosis coding which is less than or equal to 10 percent will indicate that concurrently collected diagnosis can be substituted for retrospective diagnosis.

Assumptions

For the propose of this project, it is assumed that:

1. The International Classification of Diseases is a valid coding method.

2. Medical records coding reflects the accurate retrospective or discharge data.

3. A block sample will be a reliable measure.

4. A sample which does not include patients admitted for delivery, newborns, absent sick, carded for record, and medical board proceedings will be content valid.

Limitations

This study is constrained by the following:

1. The research results can only be applied to the Darnall Army Community Hospital service area.

2. The research project is limited to the first and second quarters Fiscal Year 1984.

3. Only the coding scheme contained in the ninth revision of the ICD will be utilized.

Hypothesis

That retrospectively determined diagnosis will be the same as concurrently determined diagnosis in 90 percent or more of the population under study.

Research Data Obtained

Based on the research methodology developed by Barnard and Esmond, data were obtained from DACH's Patient Administration Division for patient dispositions during January 1984.[64] The data elements obtained were patient number, principal diagnosis (concurrent and retrospective), additional diagnoses, sex, principal service utilized, and beneficiary category. To accurately assess the difference between concurrent and retrospective diagnostic data, all patients admitted for delivery, newborns, absent sick, carded for record, and medical boards were eliminated from the study. Table 9 lists the analysis of the two types of diagnoses by service. Table 10 summarizes the results of the study.

TABLE 9

MATCHING CONCURRENT AND RETROSPECTIVE DIAGNOSES BY SERVICE

Clinical Service	Concurrent Diagnosis Same as Retrospective Diagnosis	Concurrent Additional Diagnosis Same as Retrospective Diagnosis	Retrospective Diagnosis Not in Concurrence
Internal Medicine	68	60	15
Pediatrics	82	30	15
General Surgery	74	7	8
Ophthalmology	30	0	0
Otolaryngology	60	0	0
Urology	15	15	0
Obstetrics	52	15	0
Gynecology	89	15	7
Orthopaedics	22	7	7
Podiatry	15	0	7
Psychiatry	7	0	0
Dental	22	0	0
Total: N = 744	536	149	59

TABLE 10

MATCHING RETROSPECTIVE PRINCIPAL AND ADDITIONAL DIAGNOSIS TO CONCURRENT DIAGNOSIS

Retrospective diagnosis matches concurrent diagnosis (%)	72.0
Concurrent additional diagnosis matches retrospective diagnosis (%)	20.0
Retrospective diagnosis does not match concurrent diagnosis (%)	8.0
Total	100.00

FOOTNOTES

[1]Gene Koretz, "Economic Diary." Business Week, No. 2785, 11 April 1983: pp. 22-24

[2]Howard J. Berman and Lewis E. Weeks, The Financial Management of Hospitals. 5th ed. (Ann Arbor, Mich.: Health Administration Press, 1982), p. 516.

[3]Ibid., p. 516.

[4]Ibid., p. 517

[5]Paul Smith, "Building Freeze on Housing, Small Hospitals is Proposed," "Army Times 43 (23 May 1983): 2.

[6]Bentley, p. 5.

[7]"DRG's Impact Would Hit M.D.s and Medical Records Personnel." Hospital Peer Review, vol. 8, No. 1 (Jan 83): p. 1-3.

[8]Edmund R. Becker and Bruce Steinwald, "Determinants of Hospital Casemix Complexity," Health Services Research 16 (Winter 1981): 441.

[9]James D. Bentley and Peter W. Butler, "Measurement of Case Mix." Topics in Health Care Financing 8 (Summer 1982): p. 2.

[10]Martin S. Feldstein, "Hospital Cost Variations and Case-Mix Differences," Medical Care 3 (April-June 1965), pp. 102-103.

[11]J. Lane and L. Lane, "The Extent of Role Differentiation Among Hospitals," Health Services Research 6 (Spring 1971), pp. 15-18.

[12]J. Lane and S. Leinhardt, "The Cost and Length of a Hospital Stay," Inquiry 13 (December 1976), pp. 327-343.

[13]L. Goodisman and T. Trompeter, "Hospital Case Mix and Average Charges Per Case: An Initial Study," Health Services Research 14 (Spring 1979), pp. 44-45.

[14] Marilyn P. Plomann, Case Mix Classification Systems: Development, Description and Testing, The Hospital Research and Educational Trust, Chicago, Illinois, 1982, p. 1.

[15]Plomann, pp.9-11.

[16]Bentley and Butler, p. 3.

[17]Mark C. Hornbrook, "Hospital Case Mix: Its Definition, Measurement and Use: Part II, Review and Alternative Measures," Medical Care Review vol. 39, No. 2 (Summer 1982), p. 82.

[18]Ibid.

[19]David D. Pekarna, Dean R. McWilliams, Daniel B. McLaughlin, and Gary L. Appel, "Population- and Diagnosis-Based Model Projects Bed Needs," Hospital Progress 63 (January 1982), p. 52.

[20]Special Report #7, "Diagnosis Related Groups," American Hospital Association, Chicago, Illinois, 1983, p. 2.

[21]Ibid.

[22]Ibid.

[23]Ibid.

[24]'Prospective Pricing Enacted,' Hospital Week, vol. 19, No. 16 (April 22, 1983), p. 4.

[25]Bentley and Butler, p. 4.

[26]Roger Kropf and James Greenberg, "A Case-Mix Approach to the Control of Hospital Capital Expenditures," Health Care Management Review, vol. 7, No. 2 (Spring 1982): p. 21.

[27]Doremus, p. 49

[28]Ibid.

[29]Plomann, p. 20.

[30]Bentley and Butler, p. 6.

[31]Mohan L. Garg, "Evaluating Inpatient costs: The Staging Mechanism," Medical Care 16 (March 1978), p. 94.

[32]Bentley and Butler, p. 8.

[33]Plomann, pp. 29-33

[34]Bentley and Butler, p. 8.

[35]Plomann, pp. 55-56.

[36]Bentley and Butler, p. 8.

[37]Hornbrook, pp. 94-95.

[38]John Mulhern and Karl Eurenius, "Multi-Level Care: A Veterans Administration Initiative in Health Care Cost Control," Journal of the American Medical Association 242 (Dec 1979), pp. 1285-1287.

[39]Plomann, pp. 77-79.

[40]Susan D. Horn and Phoebe D. Sharkey, "Measuring Severity of Illness to Predict Patient Resource Use Within DRGs," Inquiry 20 (Winter 1983), p. 314.

[41]Plomann, p. 88.

[42]Plomann, pp. 88-89.

[43]Hornbrook, p. 97.

[44]Bentley and Butler, pp. 7-8.

[45]Plomann, pp. 101-102.

[46]Plomann, pp. 113-115.

[47]James I. Siemon, "Case Mix and Data Quality," Topics in Health Record Management 2 (June 1982), p. 19-20.

[48]Richard F. Corn, "Quality Control of Hospital Discharge Data," Medical Care 18 (April 1980), p. 416.

[49]Linda K. Demlo; Paul M. Campbell; and Sarah S. Brown,S. "Reliability of Information Abstracted from Patients' Medical Records," Medical Care 16 (December 1978), p. 995.

[50]Linda K. Demlo and Paul M. Campbell, "Improving Hospital Discharge Data: Lessons From the National Hospital Discharge Survey," Medical Care 19 (October 1981), p. 1032.

[51]Demlo, "Reliability of Information," p. 992.

[52]Ibid., p. 995-997.

[53]Demlo, "Improving Hospital Discharge Data," p. 1030.

[54]Demlo, "Reliability of Information," p. 998.

[55]Demlo, "Improving Hospital Discharge Data," p. 1003, 1031.

[56]Ibid., p. 1038.

[57]Corn, "Quality Control of Hospital Discharge Data," p. 417-426.

[58]Cynthia Barnard and Truman Esmond, "DRG-Based Reimbursement: The Use of Concurrent and Retrospective Clinical Data," Medical Care 19 (November 1981), pp. 1072-1076.

[59]Ibid., p. 1077.

[60]Ibid., p. 1079.

[61]Ibid., p. 1082.

[62]H.P. Doremus and Elana M. Michenzi, "Data Quality an Illustration of Its Potential Impact Upon a Diagnosis-Related Group's Case Mix Index and Reimbursement" Medical Care Vol. 21:10 (Oct 83) pp. 1001-1010.

[63]Hornbrook, p. 98.

[64]Barnard and Esmond, pp. 1076-1077.

II. DISCUSSION

General Overview

The discussion will review research results regarding the discrepancy rate among concurrent and retrospective diagnoses. Additionally, the reasons for the discrepancy will be examined to determine possible causes. The average monthly number of patient dispositions for Fiscal Year 1984 is 1111. The number of patient dispositions observed in the 31-day study sample was 1262 which indicates that the sample was representative of normal inpatient activity.

While the study results show a discrepancy rate less than that found in other studies previously referenced, there is a sufficient problem indication which questions the reliability of patient data. Because our patient population is unique (young; small retired population), it is difficult to make a general statement about the quality of medical records' data throughout Health Services Command. However, the analysis of data can identify some causal relationships that might be applicable to other military hospitals.

Analysis of Data

In reviewing the data, the discrepancy rate between concurrent and retrospective data reached 28 percent. This rate compares quite favorably with discrepancy rates previously cited and leads one to question the overall reliability of discharge data and its use in development of a case

mix system for Darnall army Community Hospital. Independent support for such an opinion comes from Bruton, Thompson, and Slee who view inaccurate records, inaccurate classification, and incomplete coding as common sources of data error in Medical Records.[1,2]

An analysis of the data shows a discrepancy rate range of 52.45 percent to 0 percent (Table 11). Even though there are four services that did not experience a discrepancy rate, three of the services are sub-services of DACH's Department of Surgery, which infers that reliability of discharge data is questionable throughout all departments except psychiatry. Additionally, the low sample population from psychiatry, leads one to question the ability to make inferences about its reliability rate.

TABLE 11

SERVICE DISCREPANCY RATE

Service	Discrepancy Rate
Internal Medicine (N=143)	52.45%
Pediatrics (N=127)	35.43%
General Surgery (N=89)	16.85%
Ophthalmology (N=30)	-0-
Ololaryngology (N=60)	-0-
Urology (N=60)	50.00%
Obstetrics (N=67)	26.32%
Gynecology (N=111)	19.82%
Orthopaedics (N=36)	38.89%
Podiatry (N=22)	31.82%
Psychiatry (N=7)	-0-
Dental (N=22)	-0-

An analysis of the reasons for data discrepancies between the concurrent diagnosis and retrospective diagnosis found in Table 11 indicated that the major reason, exhibited in 64% of the cases, was a failure to review the updated medical record after admission. It should be noted

that there is no requirement for a medical staff member to change his principal diagnosis. Thus, this review revealed that frequently the medical staff member's principal diagnosis on admission was the same upon discharge. This is quite obvious when one examines the high discrepancy rate in Internal Medicine, which has a large number of "rule out" admissions. Coding errors accounted for 25 percent of the discrepancies. Other reasons accounted for 11 percent.

It was noted that in 20 percent of the cases in which there was a discrepancy rate, concurrent additional diagnosis was the same as the retrospective diagnosis. This gives validity to the view that the medical staff is not updating the diagnosis after admission. In addition, it was discovered that the secondary diagnosis was not clearly identified. Under our current medical records system, this is not a problem. However, an accurate secondary diagnosis is required for certain case mix classification schemes. Thus, our current data would not be reliable for such classification schemes.

FOOTNOTES

[1]D. Bruton, "Uniform Reporting for Case Mix," Topics in Health Care Financing, 6:2 (Feb 1979), pp. 73-96.

[2]B. Thompson and V. Slee, "Accuracy of Diagnosis and Operation Coding," Medical Record News, 49:5 (October 1978), pp. 1-11.

III. CONCLUSIONS AND RECOMMENDATIONS

Answer to Research Statement

Based on the results of this research and the criteria, a concurrently determined diagnosis cannot be substituted for retrospectively determined diagnosis at Darnall Army Community Hospital.

Conclusions on Data Reliability at DACH

The results of this study further reinforce the findings of the Institute of Medicine Studies, Barnard and Esmond and Doremus and Michenzi, that case mix classification systems should not be implemented until the reliability of the data has greatly improved. The implementation of a case mix budget system, based on current medical records data, could lead to inappropriate budget guidance.

Existing hospital discharge data are adequate for our current military budget system, descriptions of general utilization patterns by beneficiary category or age, and comparisons of overall lengths-of-stay among Army hospitals. However, the insufficient reliability of discharge data questions its use in measuring case mix as an indication of intensity of services. The usefulness of data on secondary procedures should also be questioned.

Recommendations

The results of this project, while only applicable to Darnall Army Community Hospital, point to a need for improving the reliability of hospital discharge data. The old adage "garbage in, garbage out" is most appropriate when one considers implementing a case mix classification system. In general, improvements in the reliability of hospital discharge data "will require fundamental changes in the way that physicians designate diagnosis, the methods by which diagnostic information is classified, and the priorities assigned to developing and maintaining good medical record systems within hospitals."[1]

In order to improve the data reliability at Darnall Army Community Hospital, the following additional recommendations are made:

1. Request that a 20 percent sample of Fiscal Year 1984 dispositions at DACH be reabstracted through the Army Studies Program to provide further research on the quality of diagnostic data. (Appendix B)

2. Establish a physician education program on the use and importance of diagnostic data. The education program would be given to Health Profession Scholarship students and all members of the medical staff.[2]

3. Institution of a seminar on case mix classification which would include the areas of why developed, current classification schemes, future use in the military health care system, and the importance of accurate diagnostic data.

4. Expand the definition of medical record completeness to include the thoroughness with which diagnostic and procedure information are expressed by physicians.[3]

5. Implement a quality control function that includes the establishment of criteria, the measurement of performance, the analysis of deviations, corrective action, and follow up.[4]

6. Increase the resources devoted to the medical records service. The additional resources would include additional personnel, increase in work space, and purchase of data processing equipment.

7. Establish a "Management Information Committee" which will supervise the development of all data processing systems to include a case mix management information system.[5]

8. Appoint the Quality Assurance Coordinator as Case Mix Coordinator to serve as the point of contact for case mix development at Darnall Army Community Hospital.

9. Strictly enforce timely completion of discharge summaries, which would decrease the lag time between a patient's discharge and completion of the medical record, which would decrease the discrepancy rate.[6]

Final Comments

The study of data quality, the focus of this research project, is unquestionably a needed study in view of the increase in dissatisfaction with the Medical Care Composite Unit, a desire to find a more accurate performance measurement system, implementation of Diagnosis Related Groups in the civilian and Veterans' Administration hospital systems, and federally mandated cost containment. While it is too early to predict the influence of these programs on the military health caresystem, they will cause our military health care planners to consider chantes in ourcurrent system. Thus, the reality is -- prepare for change. This research project is an attempt to prepare for change and to stimulate greater consideration of a problem inherent in the development of new performance measurement systems. Given the results of this study, additional research by other Army hospitals is recommended. This would facilitate the development of improved data quality and measures of hospital output.

FOOTNOTES

[1]Demlo and Campbell, p. 1038.

[2]Doremus, p. 1011.

[3]B.J. Thompson and Slee, pp. 43-60.

[4]Barbara J. Thompson and Roland J. Lomp,, "Quality Control of Diagnosis and Procedure Coding," Topics in Health Record Management, 5 (March 1984), p. 48.

[5]Cynthia Barnard, "Preparing for Case Mix: The Role of Data Processing," Hospital Financial Management, 13 (June 1983), pp. 62-63

[6]Jeffrey R. Jay, "Five Proven Ways to Come Out Ahead Under DRGs," The Hospital Medical Staff 13:6 (June 1984), p. 29.

APPENDIX A
Case Mix Definitions

APPENDIX A

Case Mix Definitions

Admitting Diagnosis: The diagnosis provided on admission as explaining the reason for admission.

Average length of stay (ALOS): The average length of hospitalization of inpatients discharged during the period under consideration.

Case: A synonymous term for discharge.

Case Mix: The diagnosis-specific makeup of a hospital's workload which directly influences the length of stay, intensity, cost and scope of the services provided by the hospital.

Case Mix Index (CMI): A summary statistic representing the relative costliness of each hospital's mix of cases compared to the national average mix of cases.

Concurrent Diagnosis: The principal diagnosis provided during the patient's hospital stay.

Cost Shifting: The practice of increasing charges to payors such as commercial insurers, self-insured employers or private paying patients since Medicare and Medicaid do not pay full costs.

Diagnosis: The commonly accepted term used to describe a disease.

Diagnosis-Related Groups (DRGs): A classification system which groups patients with similar diagnoses (diseases) based upon service characteristics through the use of ICD-9-CM codes.

Discharge: The termination of a period of inpatient hospitalization through the formal release of the inpatient by the hospital.

Disease Staging: A case classification scheme that establishes standard cost based on a patient's most severe state of primary diagnosis.

DRG Creep: Deliberate coding of a patient's diagnosis to maximize hospital payments.

Health Care Financing Administration (HCFA): The federal agency within the Department of Health and Human Services (DHHS) that is responsible for administering the Medicare program.

Health Maintenance Organizations (HMOs): Prepaid health plans generally based on a predetermined capitation rate.

ICD-9-CM: International Classification of Diseases, 9th Revision, Clinical Modification. A statistical coding classification system used to measure the incidence of disease, injury and illness.

Isocost Groups: A classification scheme which groups diagnoses using total cost per case, rather than length of stay, as a major variable.

Major Diagnosis: The diagnosis accounting for the greatest resource consumption during a patient stay.

Major Diagnostic Categories (MDCs): A classification system which groups the 467 DRGs into 23 categories based on body systems (e.g., nervous system, respiratory system, etc.) and disease origin.

Major Procedure: The procedure most related to major diagnosis.

Outliers: Atypical hospital cases that have an extremely long length of stay or unusually high cost when compared to most discharges in the same diagnosis-related group.

Pass-Through Costs: A cost reimbursed on a cost basis.

Preferred Provider Organizations (PPOs): Health care delivery systems comprising hospitals and physicians who contract on a fee-for-service basis with employers, insurance carriers or third-party administrators to provide comprehensive medical care to subscribers.

Principal Diagnosis: The condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.

Principal Procedure: The therapeutic procedure performed that is most related to the principal diagnosis.

Procedure: Diagnostic or therapeutic procedures performed during a patient stay.

Prospective Payment Systems (PPS): A method of payment for hospitals based on a fixed predetermined payment per case, discharge or per diem, or an overall revenue limitation, regardless of costs actually incurred.

Ratio of Cost to Charges (RCC): A method of assigning costs to payors based on charges.

Retrospective Cost-Based Reimbursement: A method of payment for hospitals based on the "reasonable costs" incurred for providing covered services to beneficiaries in the preceding year(s).

Retrospective Diagnosis: The principal diagnosis established by medical records personnel after discharge.

Secondary Diagnosis: A condition affecting the treatment received and/or length of stay.

Severity of Illness Index: A measure to reflect the relative level of loss of function and mortality normally caused by a particular illness.

TEFRA: Tax Equity and Fiscal Responsibility Act of 1982 (Public Law 97-248).

APPENDIX B
Study Proposal

APPENDIX B

Study Proposal

1. Subject: An analysis of the quality of Medical Records' Data.

2. Problem Statement: To determine if data quality is reliable for developing a case mix measurement system by reabstracting 20 percent of Fiscal Year 1984 inpatient records at Darnall Army Community Hospital.

3. Submitting Command: USA MEDDAC, Fort Hood, Texas.

4. Justification:

a. Studied by the Institute of Medicine have questioned the reliability of discharge data and the validity of using discharge data to determine case mix measurement systems.

b. There is a need to evaluate the reliability of our discharge data prior to developing an Army case mix measurement system.

5. Total Army Goals Supported: Management.

6. Payoff to the AMEDD:

a. More effective health planning.

b. Identification of possible deficiencies within our Patient Administration Services.

c. More effective medical record data collection.

7. Expected Results:

a. Advance the knowledge of data quality within the AMEDD.

b. Identify strong/weak points of our medical record service.

8. Date Study Results Required: April 1986.

9. Point of Contact: MAJ Lawrence M. Leahy, AV 738-8004.

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